

COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

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ENTERING OUR FIFTH YEAR OF SERVICE

COOP'S TECHNOLOGY DIGEST

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THE REALITY OF ALTERNATE DELIVERY FORMS OF INTERNET

Anyone who uses and depends upon the local telephone company connection to bring Internet into their home or workplace has a long list of "war stories" to relate concerning the poor quality service they have come to expect. For readers who do not have Internet in their daily lives, a very brief explanation.

Internet is a world-wide interconnected data access system. A PC is connected to your telephone line through a transfer device known as a modem. The modem connects to the local telephone switching network and a request to be connected to Internet, entered via software in the PC, automatically "dials" the PC to the Internet world.

There are a minimum of two layers of equipment between the PC and Internet; sometimes three. Layer one is the Internet Service Provider (ISP). In major centres such as Auckland there are multiple ISP's and each strives to outperform the other by providing faster connections, more reliable service, at cheaper connection rates than the competition. In smaller centres and rural areas, there is seldom more than one ISP. Think of the ISP as an automated telephone operator, "answering" your PC query and then providing as fast and as efficiently as possible a connection from your PC to the portion of Internet you have requested.

Layer two is a telephone network provider. Clear is one such provider, Telecom is another. And there are others as well. The ISP installs a multiple line toll free number to dial into from the PC, and "server equipment" which takes the individual calls, determines what Internet destination the PC is asking to be connected with, and then provides the connection. The toll free number between the PC and the ISP is leased from Clear, Telecom or another "network provider." And the connection from the ISP to the portion of Internet requested by the PC is also provided by the same (or another) "network provider." This last interconnect may be via fibre optic cable buried beneath the sea, older copper lines buried beneath the sea, or through a direct satellite connection maintained by the network provider (or within country through terrestrial connections).

The most simple ISP is nothing but a high speed switch. More complex ISPs maintain a quantity of in house "memory" and can actually "store" (keep in stock) some portion (but never a very large portion) of the Internet inventory at any point in time. The reason an ISP does this is to allow your PC data request to a specific portion of Internet to be served faster, and without having to employ costly overseas / under sea lines to reach the specific Internet "site" you have requested. An ISP that keeps a portion of Internet "in stock" measures how often various sites are required, determines which ones are frequently used, and then selects these to be maintained in "ISP memory" to eliminate the need for actually connecting the PC to a distant point each time a specific, popular "Web Site" is requested.

In all of this telephone lines are the backbone workhorse. They connect the PC to the ISP, the ISP to the network provider, and the network provider to the rest of the world. In the retail world, the PC is the customer, the ISP is the dealer, the network provider is the distributor and Internet itself is the manufacturer.

The numbers vary from country to country. In Australia, the most recent analysis tells us that 35% of all telephone circuits "on average" are being utilised for Internet access. Go back ten years, before Internet. That means the circuits now being used were not being used at all; they were "spare" or emergency capacity to handle those occasional (Christmas, Mother's Day, etc.) bumps in telephone network usage. New Zealand numbers come close to being a mirror of Australia. Moreover, the rate

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of growth of telephone circuit line usage - almost all because of the growth of the Internet popularity - approaches 10% per annum. It does not take a genius to realise that at some point all available telephone circuits will be overloaded, world-wide, thanks to the popularity of Internet. Right?

Actually, that is wrong. Technology is improving the rate (speed) and quantity (amount) of data that a standard telephone line can handle at about the same rate of growth; 10% per annum. Unfortunately, the improvements must be built in by the network provider and the ISP as they become available. This says that at the present rate of growth, every ten years there is a 100% improvement in speed and data rate but it also says that once every ten years the network provider and the ISP must completely rebuild their networks or equipment to upgrade their own ability with the latest technology. As a practical matter, few ISPs or any telco can afford to rebuild only once every ten years. Rather it is in a constant state of rebuilding, and in truth it can never catch up because the goal posts are moved further and further away each year.

An Internet user may have to dial his ISP 3, 30 or 300 times just to be connected to Internet. How long you have to dial to get the ISP is a function of usage level. The more successful an ISP in attracting clients, the longer the user has to wait in queue to get into the system. Once connected, the next problem is "automatic disconnect." If the user is trying to drag out of Internet a sizeable data file that requires tens of minutes or even hours to download to the PC, the ISP may decide that you have had "enough time" and simply cut you off. When you connect a clock begins to run, and if the queue is very long behind you, at some point the clock says to the computer, "This user has been on here for 55 minutes and we have a queue so long that we need to cut the user off so others can have a chance." Click. Dial tone.

And those are the "good points" of playing with Internet in midyear 1997. Frustration levels are high with users, emotions are dangerously close to overload and the PC user blames the ISP who blames the network operator who blames Internet itself.

If there was ever an opportunity for techno-hype to replace techno-fact, for people with no real technical understanding of the system to be sucked into business opportunities which promise to "fix a problem," Internet is it. And the overly zealous, the out and out con men, and the gangsters are coming out of the woodwork in legions.

What Is Internet - Anyway?

Internet began life as a (US) military computer interconnection system. It then expanded to interconnect computers at leading universities, libraries, and about ten years ago it became possible for an individual PC in a private home to also interconnect. Here are some of the amazing facts about Internet:

- 1) It is not a corporate entity; there is no board of directors
- 2) Nobody owns Internet, not even Bill Gates
- 3) There are no operating rules for Internet as a whole
- 4) There is not one country in the world that "regulates" Internet, or even tries to, at this point in time.
- 5) There is no direct charge for using Internet proper although some users of Internet have established fees to use the material they "post" (make available) on Internet
- 6) Internet owns no wires or cable or switches or modems; it owns nothing because it does not even exist except in name

Internet is the largest data network in the world. It is also rapidly becoming the largest telephone system in the world. Some people believe it will one day (within 5 years) become the largest video delivery system in the world. And *nobody* owns it, runs it, controls it, or writes rules for it. Internet - the enigma - scares the crap out of the established telecommunications world.

Telecom and Clear provide access to Internet - as network providers - because they have customers who demand that they do so. The ISP business is new, and has developed in just a few years from no ISPs, because Telecom and Clear when initially offering Internet access to PCs tried to charge more for it than the users felt reasonable. ISPs came along as an intermediary, and by combining the bulk buying power of all of their clients, purchase "wholesale" time on the Telecom and Clear networks which in turn they could resell (with value added) to individual PC using clients. "Wholesale bulk time?" Remember that before Internet took off, Telecom (and Clear and Telstra) had lots of unused

"wire time" sitting around waiting for the next mother's day bubble in long distance calls. They were greedy enough to see an opportunity to make money with their surplus wire time and were willing to sell it, at a discount, to ISPs and others because they could make more money by doing so.

ISPs and network operators make money with Internet by selling wire time and connectivity. International telephone consortiums who have invested in undersea fibre optic cables or satellite links make money the same way - Internet keeps them running closer to capacity (and generating more revenue) than would occur without Internet. Unfortunately for every level involved the rapid growth in Internet usage is taxing the capacity of each portion of the link, starting at the user's PC modem and telephone line connection and, terminating at the high speed servers located 12 time zones away that provide the data which the PC has requested.

And - this is pivotal - Internet connection time is sold at the maximum discount. Internet wire time is time that would otherwise go unused. On Mother's Day each year, the wire time capacity held in reserve for this annual telephone calling binge generates a bubble of billions of dollars in once-per-year income for the telephone networks. The rest of the year this surplus capacity sits there doing nothing. So it is sold through network managers to ISPs and others for a fraction - a tiny fraction - of what it could generate in revenue on Mother's Day. That is why Internet connection time, through an ISP, can be resold to PC users for a few dollars per hour for world-wide connection. The truth is that if you had two telephone lines, connected your PC to one and used the other with a normal telephone instrument - and - made identical length calls on each to Paris, France - the Internet connection fee for the time would come in around 5% of the connection time for the telephone circuit. Both went to the same place, for the same length of time. One cost pennies, the other cost tens of dollars. And believe it or not - the one costing pennies still generates a profit for the telephone firms involved. What that says about the profits generated by the normal telephone call to the same location borders on usury.

The Hucksters Move In

The business opportunities in all of this are so immense that analysts suggest as much as 20% of the present world economic growth is tied directly or indirectly to the rapid growth of Internet. Moreover, as the forecast calls for compounding growth of Internet for the next decade or longer, short of a world catastrophe of unimagined proportions, the outlook for the world's economy looks very sound for quite sometime into the 20th century.

Getting "in on the Internet action" has become a dream of corporate managers. Step one is to connect. Step two is to become a participant by creating your own (corporate) Internet identity (a Web Site). Step three is to investigate the thousands of business opportunities built upon steps one and two.

The most obvious place to claim an "improvement" in Internet is to tackle the bottleneck that presently impedes Internet users who are trying to use the service. Remember that as the popularity of Internet has risen, the amount of time required to connect your PC to Internet has lengthened. And the reliability of staying connected, once connected, has decreased. Suppose someone could create a system that:

- 1) Got you connected with Internet *faster*
- 2) Got the data you seek from Internet *faster* (which means once connected you stay "*on line*" for a shorter period of time simply because the files you need are sent to you faster)
- 3) Give the user more *control* over where he was connected, and, just to sweeten the offering -
- 4) Did all of this for *less money* than the local ISP and network provider now charge?

Does that sound like a sure fire winner? You say you want to know if the people who have such a system worked out are looking for investors? Hey - Alexander Graham Bell originally sold ten people shares in his first telephone company for US\$1,000 each. Want to hazard a wild guess how much those ten people's shares would be worth today? The answer is "nearly US\$50,000,000,000." How much is that? Almost twice the net worth of Bill Gates.

So - is it *really* possible to connect faster, send data faster, provide more user control and do all of this for less cost than present charges? Some very knowledgeable business firms believe so; Telecom is one of those. And you can buy Telecom stock over the counter or by phone or mail, daily - 24 hours daily, thanks to your telephone connection to the world stock markets.

But anyone can buy Telecom stock. Is there not somebody out there, working in a small workshop as Alexander Graham Bell did 125 years ago, who might - just might - be another AGB? The answer is there are thousands of budding AGBs and for every one of these there are business firms who would like to capitalise on their innovations. Everyone dreams - occasionally - of turning \$1,000 into \$50,000,000,000.

What are the options available to resolving the present connection bottlenecks?

Option one is obvious: If the telephone network operators are creating the bottlenecks, bypass the telephone services. Or, if it is the network operators and the ISPs combined that are creating the bottleneck, bypass them both!

Option two is to rebuild the portion of the network operation, and/or ISP operation, that is causing the bottleneck. Identify the problem, create new technology to fix it, build the hardware, load the software and make the problem go away.

Option three is to change the rules of Internet delivery. Internet was never planned by an engineer, it simply "happened." If someone had actually sat down and created Internet on paper before they started it by connecting computers together through existing telephone lines - chances are it would have been launched in a much different form. A "purpose built" interconnection system, designed for the unique requirements of Internet, would look nothing like the hodge podge of interconnected telephone circuits, ISP servers, undersea fibre optic cables and over the equator satellites we now use for Internet.

Option three first. Bill Gates and some friends are investing US\$9,000,000,000 in creating a 245 satellite network which will do just that; be a purpose designed and purpose built world-wide Internet network that will offer Internet data connectivity, Internet telephone, even Internet video. It will do this largely without using the wires of your local telephone company nor the hard drives of your local ISP. 2001 is "D" year.

Option two - rebuild and in the process identify and correct the bottlenecks. Telecom is doing this through their "First Media" division. Saturn would like to do this with their perhaps misnamed "cable television network" in Wellington. Foxtel, Optus hope to grow their recently launched "cable television networks" into this in Australia.

And option one. Not everyone has the resources to invest (US)\$9,000,000,000 to create the Gate's solution. Nor the NZ\$100,000,000 First Media and Saturn claim to be spending to start their option two approach in Wellington and Auckland. But it is within financial reach of many entrepreneurs (or groups of entrepreneurs) to create investment portfolios ranging from \$1,000,000 to \$10,000,000 to tackle the problem at the option one level. How might one approach eliminating the telephone service bottleneck?

The WebTV/VBI Solution

The majority of Internet use time is spent "browsing." That's a trade term that describes what you do when you have your PC "on line" and you are exploring the millions of different topics, Web Sites, information sources now available on Internet. It amounts to "grazing." You dial up your ISP, ask for connection to Internet and then you simply "look around."

This means the majority of Internet connection time is spent "receiving data," and when you find something that interests you, commanding that "data file" (Web Site, page, file) to "download" from Internet to the hard drive on your PC. At NZ\$4.95 per hour for "browsing," it is reported the average NZ and Australian Internet user runs up a monthly bill between \$40 and \$50. Some of course spend far more than this "surfing Internet."

When you are receiving data, it flows from Internet (the world-wide data base) through the world's communication grid, to your network manager, to your ISP, and then finally to your PC. For the majority of the time you are browsing, some studies say between 90 and 95% of the time, your PC is not "transmitting" anything. It is a semi-passive receiver. This means that in a one hour session with Internet, you will spend around 54 minutes receiving data and 6 minutes transmitting something. Almost all of that "something" involves you using your keyboard to send instructions to the Internet "sites" you have "found;" you ask it to change files, move to an interconnected Web Site, or look for certain specific, key words, phrases or topics. Some very clever people have figured out that if you spend only a small fraction of your time transmitting commands, you really don't need to be

Internet via telephone

- ✓ Long waits to make connection
- ✓ Under 30 kbps data transfer
- ✓ Typically \$4.95 per hour usage
- ✓ Transmit and receive time is billed as usage
- ✓ User buys modem, special software for PC

Internet via satellite

- ✓ Telephone line used only for ordering specific data
- ✓ Claimed 400 kbps data transfer
- ✓ Transmit time on toll free number
- ✓ Receive time billed flat rate
- ✓ User buys satellite system

Internet via "VBI"

- ✓ Telephone line used only for ordering specific data
- ✓ Claimed 400 kbps data transfer
- ✓ Transmit time on toll free number
- ✓ Receive time billed flat rate
- ✓ User buys decoder

connected to Internet at all except for those brief periods when you need to send a command. How, if you are not connected to Internet, might you receive the data that is being sent?

That's the clever part.

Internet, when you are only receiving, is a distant but identifiable cousin to broadcasting. Think of Internet as a cable TV or satellite TV *broadcasting* system with an infinite number of *channels*. Each "channel" is a topic or subject; such as Rugby. You dial up the "Rugby channel" (which is composed of every Web Site or information base in the world with the word "Rugby" in it). Having reached the "Rugby channel," you then proceed to "browse" (surf through the hundreds, thousands, tens of thousands) of pages of text, graphics, even audio clips and video clips that deal with Rugby. The only time your PC transmits anything is when you ask to be connected to the "Rugby channel." Once your request has been received, the amazing software servers of Internet - all over the world - go to work locating every file in their data bases that include the key search word, "Rugby."

Asking to "see" the "Rugby channel" might require ten seconds of transmission time. The identity (address) of your PC is recorded and your key search word (Rugby) is registered. Now, suppose you could then disconnect from Internet through your ISP and network operator but somehow still, magically, have every file in the world with the word "Rugby" in it delivered to your PC? Is this possible?

Not only possible, but a reality.

That is the premise for the one year old DirecPC service in North America which utilises satellite to deliver your requested files. DirecPC subscribers use their PC plus modem to contact the DirecPC "Super ISP" and request the material they are searching for. Then the PC disconnects from the Super ISP and the satellite portion takes over. The PC to ISP "transmit portion" uses conventional wire line (telephone) connection; the *delivery* (to the user) of the material uses satellite. There are numerous benefits to this. It is faster to connect with the ISP (if each connection is only "on line" for tens of seconds, the queue moves much faster), the satellite download of the Rugby file is faster (the satellite has far more "bandwidth" than the telephone line which results in faster movement of files), and there is a bonus: The loading on the overworked telephone circuits is cut to a fraction of the standard two-way telco line Internet connections since the receiving segment of the communication is taken away from the wire lines.

This is also the premise for a system created by Australian Eric Fien who with partners has founded Broadnet International Pty Ltd. Fien's system has the same basic approach as DirecPC: The PC plus modem transmit briefly to request a file, then hang-up and the delivery begins. Fien, however, replaces satellite delivery with terrestrial television signal delivery. How is that possible? Fien's technique, proprietary to Broadnet International and already under licence in such diverse locations as Singapore, utilises a segment of the normal TV broadcast signal which is not otherwise in use. They call this the "vertical blanking interval" or VBI. Broadnet leases VBI "space" from broadcasters and uses this space to respond to subscriber requests. The interconnection network is complex, but affordable and most importantly - anyone with access to a TV broadcast signal automatically can receive (with the appropriate equipment) the VBI return path circuit of the Broadnet Internet. This is a bit of a cost-break-through because it means that not only are telephone lines bypassed for Internet delivery, but so too is the more complex and certainly more costly satellite receiving equipment of DirecPC.

There are other techniques for bypassing the telephone lines. New Zealand BCL has created, perhaps uniquely in the world, a terrestrial microwave system based upon satellite principals (see

CTD 9701, p. 2). This system is scheduled for trial with the financial co-operation of an Auckland based Internet provider before the end of this year. Unfortunately, the terrestrial microwave reception equipment costs no less than the satellite reception microwave equipment so on a measure of cost effectiveness, Broadnet is still the least expensive approach. In the United States, a less sophisticated version of the Broadnet approach - called WebTV by its creators - also utilises the VBI segment of a TV broadcast signal for Internet delivery. However, in its present form this is a slower delivery speed service than Broadnet and is designed to be only one-way.

One way? The basic premise of Internet is that you can make contact with, and request information from, any of millions of Web sites world-wide. There is two-way communication here - you ask for something specific, and Internet magically finds what you have requested and delivers it to your PC. A German company called MediaNet thought they saw a niche market in which people would be satisfied with only receiving Internet. Here the concept is that users don't request a specific file, data base or Web site but rather Internet's body of information simply flows through your PC and you pick off and save for review those portions, segments or topics which interest you. Think of MediaNet as a high speed browsing system - your PC is somehow connected to receive-only from Internet and at a speed that is far too fast for your own mental agility, this material races through the PC. There is so much data racing through your PC that if you asked your PC to "save" everything passing by, in a matter of minutes a 800 Mb hard drive would be filled. Obviously such "one-way" service needs some form of topic-select and topic-save management. Software created for this purpose is a part of the decoder box, supplied for MediaNet.

MediaNet and WebTV have a place in the overall scheme of things but most serious Internet users and providers classify them as "toy Internet." There is a belief that if the user cannot communicate *with* the Internet world, you become a "passive observer" and are less of a participant. The lure of Internet, they believe, is that each user is actually "communicating with" the vastness of "the net." MediaNet claims more than 1,000,000 users in Europe, mostly in Germany, and after a Dm125 decoder purchase pay typically DM15 per month for access. WebTV, an American innovation (1), has a slightly more sophisticated decoder box which "stands alone" from your PC. MediaNet requires a user PC, WebTV requires that the user only have a television set (to receive the VBI signal, and then display the WebTV pages). WebTV decoders sell in the range of US\$250 and the monthly service fee approximates US\$20.

So there are several technical approaches to providing Internet "access" without being tied to a telephone company circuit and each has something going for it. Those that are two-way remain wed to the local telephone line for the "return path" (the requesting of specific information).

The New Zealand / Australia Connection

DirecPC is in the process of establishing a presence in Japan (CTD 9701, p.2) and Australian telephone operator Telstra has negotiated an agreement for DirecPC "rights" in Australia. In Japan, a PanAmSat (now partnered with Hughes that created DirecPC) satellite will deliver the DirecPC connection to 1m region satellite dishes. In theory, Telstra *could* do the same thing using the same PanAmSat Ku-band satellite (2) for Australia. Further, because PanAmSat covers both Australia and New Zealand, in theory Telstra could offer the same level of satellite delivered Internet service into New Zealand as well as Australia.

New Zealand Internet ISP groups such as IHUG began a gradual shift to satellite delivery of the basic Internet service earlier this year. Using a specialised PanAmSat Ku band feed originating in the

1/ WebTV with fewer than 100,000 subscribers has recently been purchased by Microsoft for US\$425 million. An office has been established in Australia as a preliminary step to bringing WebTV service to the South Pacific. German MediaNet has licensed its version of one-way Internet delivery to a firm calling itself Net On Air Asia Pacific (2/62 Lawrence Drive, PO Box 3181 Nerang 4211, Qld [Australia]; contact Barry Taylor at tel 61-3-9596-2353).

2/ Australian Telstra's business plan for DirecPC there is unannounced. However, PanAmSat confirms Telstra has leased "multiple" PAS-2 Ku-band transponders and although it plans to distribute some TV services separate from DirecPC within this Ku-band spectrum space, certainly they have more space available to them than is required for television programme delivery only.

USA, IHUG (and other ISPs) now bypass undersea fibre optic and copper wire links. This has no direct bearing on what the ISP *subscriber* experiences since the IHUG level feeds are intended for the Internet Service Providers redistribution, not individual Internet users. It is important too understand there are at least two Internet satellite levels or services at work here. DirecPC offers / will offer a *direct* satellite link to subscribers and will in effect be competing with the ISPs who must still rely upon telephone company wire links to the subscribers. At the same time, ISPs are upgrading their own ability to access Internet more rapidly by taking their own "return feed" directly off of satellite rather than through the telephone links.

So where do the business opportunists enter the picture?

The ACTONZ Case Study

Actonz is a New Zealand corporation with headquarters in Wellington (3). President Scott Anderson, from a banking connected family, is self described as a venture capitalist. Anderson believes he has devised a system that attracts capital from high net worth (tax rate) individuals using computer software as a product. A report appearing in the June 18th edition of (NZ) Infotech Weekly wrote:

"The 35-year-old entrepreneur has set up businesses spanning software marketing, electronics manufacturing and the provision of Internet services, all working to a common aim."

Actonz Management is a corporate vehicle modelled around a forestry partnership investment business plan. Partnerships pay no tax and the losses a partnership incurs are carried over to the individual partners. The soft spoken Anderson claims, *"There is no culture of software investment in New Zealand. People are screaming for venture capital for software, but there is no market providing it. I have put together a financing ability, and an ability to market, with this demand for venture capital. Software is a depreciable asset written off over three years* (by comparison, forestry tax benefits extend over 30 years)."

Translation: "High net worth" individuals are buying NZ\$100,000 partnership shares in software ventures and hoping for as much as 80% of their investment back in 3 years as a result of accelerated tax credits, plus, if the software earns revenue, they also share in the earnings as well. It is not quite on a par with Alexander Graham Bell's original ten investors, but for 1997 it comes pretty close. And Anderson was claiming "\$240 million has already been collected in the investment pool" when interviewed early in June by Infotech Weekly.

What does this have to do with Internet?

ACTONZ seeks out software which has been or is being developed that Anderson identifies as having a wider use application than perhaps its creators had envisioned. For example, BACCIS is a ACTONZ refined batch interface billing and customer care system electrical power (industry) "smart metering system." Software is often developed by a private firm for their internal use, but not seen as a commercial product in its own right. Anderson's staff reviews software created for one limited purpose with an eye towards how the original purpose could be expanded. In effect, turn a house-use software program into a national or international software product.

There are losers and winners in the software business; many products seem revolutionary until they appear in the marketplace and run into competition from other developers who have been working in the same area. It is the nature of software development that security surrounds each new software offering until the marketing firm is ready to release it with a big splash. Two or more firms often end up in the marketplace with similar, occasionally identical, software at about the same point in time.

Translation: Hundreds of thousands of dollars - even millions - can be spent perfecting a piece of software only to discover on marketing day that someone else beat you to the marketplace with something even more advanced. Venture capital can end up owning a piece of a winner - or a loser.

As you might suspect, going from your PC to Internet is primarily software dependent. ACTONZ, as a relatively small in-house project, has been an ISP (Internet service provider) long enough to develop a staff and test various internally developed software products. From this ISP activity, Anderson has developed what he terms an "Internet model business plan." He has strong personal

3/ ACTONZ (Advanced Communication Technologies of New Zealand Limited), Mr. Scott Anderson, President; Digital House, Wellington.

views on what is right - and wrong, with Internet at this time.

He sees the majority of ISP operators as "computer enthusiasts with no proper sense of business." Privately, he also believes that today's (NZ) ISP world is headed for a major shake-up and consolidation. His staff talks openly of "taking over the Internet ISP world by advancing money to existing operators against their hardware assets and then foreclosing on their operations when their present business practices result in bankruptcy " (4). What ACTONZ has in mind is a consolidation of ISP customers, one ISP at a time, into customers for a to be named "super ISP" operated by ACTONZ.

But which vehicle, of all of those available (WebTV, MediaNet, DirecPC, Broadnet International et al) would most perfectly fit the market needs and the unique operating style of ACTONZ? The answer would be Broadnet.

On March 14, Actonz contacted Australian Eric Fien to express an interest in his VBI based system. ACTONZ was shopping not just for the appropriate Internet "vehicle" but also for the best opportunity to use their 3 year software depreciation program. Fien would subsequently travel to Wellington (April 2 - 3) to meet with a sizeable portion of the ACTONZ staff. The basic business plan evolving at that point was as follows:

1) ACTONZ would purchase from Broadnet certain rights to the Broadnet system. This would include software created originally by Fien and his associates. The purchase price was to be in excess of A\$600,000.

2) Broadnet would arrange for VBI space (5) within the New Zealand television broadcast industry

3) The VBI-Internet decoder box, sourced by Broadnet in North America and Europe, would be manufactured by a Scott Anderson involved company, Exicom of Porirua.

4) Two "levels" of Internet would be on offer; a receive only service (similar in concept to WebTV) in the range of NZ\$15 per month and a transmit (through telephone modem) and receive (request line) service in the range of NZ\$25 per month.

5) ACTONZ, approaching existing ISPs, would attempt to increase their "points of presence" (POP) throughout New Zealand by offering financial support to those ISPs who became a part of the distribution plan. Where this was not possible, through telephone company Clear ACTONZ would provide subscriber access to the "request line" service.

6) A "Master Control Centre" (MCC) facility would be established outside of Wellington and individual ISPs and POPs would communicate their request line orders to the MCC through VSAT terminal connections. All billing and user record keeping would be operated by software from Wellington through a VSAT dish system installed by ACTONZ in Wellington for this purpose.

Anderson flew to Sydney to meet with additional principals at Broadnet, and as on May 12th Eric Fien was advising all parties, "We expect ACTONZ to be in a position to conclude the contract for the VBI delivery system before the end of this week." And then it all came apart, reasons for which we will explore in some detail in CTD for September. (ACTONZ projections on page 10)



Scott Anderson, President of ACTONZ

4/ ACTONZ's Lou Parun (Director) to CTD, April 3, 1997.

5/ Broadnet began negotiations with Mark Brokenshire at TVNZ who opened the possibility that "4-5 VBI lines" might be made available within the TV1 and TV2 transmission streams. TVNZ already uses a portion of their VBI for teletext service but believed they could find room for an additional, paying, user as well.

DRAFT CASHFLOW & FINANCIAL FORECAST FOR FINANCIAL YEAR ENDED 30 SEPTEMBER 1998												
INTERNET TV												
PAGE ONE - PROFIT AND CASH FORECAST												
	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Mar 98	Apr 98	May 98	Jun 98	Jul 98	Aug 98	Sep 98
SALES UNITS												
Marked Growth	12%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Marked Size	300,465	363,563	399,919	439,911	483,902	532,892	585,521	644,073	708,481	779,339	857,252	942,988
Penetration	5.00%	6.00%	7.00%	8.00%	9.00%	10.00%	11.00%	12.00%	13.00%	14.00%	15.00%	15.00%
TOTAL CONNECTIONS	18,526	21,814	27,994	35,163	43,551	53,229	64,407	77,289	92,102	109,106	128,569	141,448
NEW CONNECTIONS	18,526	5,288	6,181	7,199	8,358	9,678	11,178	12,881	14,814	17,004	19,483	22,859
SALES PRICES												
Decoder Cards	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
Monthly Fee - Broad Net	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20	\$20
Percentage Broad Net	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Percentage Broad Net	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35
Percentage Broad Net	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
SALES DOLLARS												
Decoders	2,478,836	793,228	927,045	1,079,781	1,253,746	1,451,706	1,676,720	1,932,220	2,222,053	2,550,531	2,922,483	3,330,462
Broad Net	132,205	174,510	223,955	281,543	346,409	425,534	515,259	618,310	736,820	872,848	1,028,714	1,131,585
Request Net	347,037	111,052	129,792	151,169	175,524	203,239	244,741	270,511	311,087	357,074	409,148	469,037
Request Net Volume Charges	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL INCOME	2,958,078	1,078,790	1,280,831	1,512,493	1,777,680	2,080,778	2,426,719	2,821,041	3,269,961	3,780,453	4,360,345	5,000,000
DIRECT COSTS												
Decoder Cost	15%	118,994	139,063	161,967	188,062	217,756	251,508	289,833	333,308	382,580	438,372	500,000
Sales Commission	33%	816,016	261,765	356,328	413,736	479,063	553,318	637,633	733,278	841,675	964,419	1,100,000
Initial Commission	33%	816,016	261,765	356,328	413,736	479,063	553,318	637,633	733,278	841,675	964,419	1,100,000
Internet Material	\$2.00	33,051	43,628	55,969	70,386	87,102	106,458	128,815	154,578	184,205	218,212	257,179
Transmission	\$3.00	49,577	65,441	83,983	105,579	130,654	159,688	193,222	231,866	276,307	327,318	385,768
Software	\$3.50	57,840	76,348	97,980	123,175	152,479	186,302	225,426	270,511	322,359	381,871	450,062
Request Volumes	\$1.00	9,915	13,088	16,797	21,116	26,131	31,938	38,644	46,373	55,261	65,464	77,154
TOTAL DIRECT COSTS		2,158,240	841,020	1,005,687	1,211,850	1,444,267	1,744,250	2,089,326	2,437,996	2,858,795	3,337,373	3,849,538
LESS DIVISIONAL EXPENSES												
Overheads as per page two	110,467	100,467	100,467	100,467	100,467	100,467	100,467	100,467	100,467	100,467	100,467	100,467
Advertising - Broadcast	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
OPERATING PROFIT (LOSS)	639,371	87,303	124,678	167,148	215,363	270,044	332,003	402,148	481,498	571,192	672,505	782,000
Less Depreciation	0	0	0	0	0	0	0	0	0	0	0	0
NET BEFORE TAX	639,371	87,303	124,678	167,148	215,363	270,044	332,003	402,148	481,498	571,192	672,505	782,000
EFFECT ON CASH-BAL SHEET CHANGES												
Change in Assets per page three	0	0	0	0	0	0	0	0	0	0	0	0
Change in Liabilities per page three	0	0	0	0	0	0	0	0	0	0	0	0
Change in Equity per page three	0	0	0	0	0	0	0	0	0	0	0	0
EFFECT ON CASH-GST												
GST received on sales-cash inwards	369,760	134,849	160,104	189,052	222,210	260,097	303,340	352,630	408,745	472,557	545,043	625,000
GST paid on expenses-cash outwards	-280,526	-114,823	-135,207	-158,856	-185,977	-217,029	-252,527	-293,049	-339,245	-391,845	-451,668	-525,000
Net GST received (paid) per period	89,234	20,225	24,897	30,196	36,233	43,068	50,813	59,581	69,500	80,711	93,375	100,000
GST Referred (Paid) to IRD	3,950	-89,234	-20,225	-24,897	-36,233	-43,068	-50,813	-59,581	-69,500	-80,711	-93,375	-100,000
Period Cash Change - surplus/(deficit)	732,555	18,295	129,349	172,458	221,390	276,879	333,748	401,916	491,417	582,404	685,169	787,000
CLOSING CASH POSITION	732,555	750,850	880,199	1,052,657	1,274,047	1,550,926	1,890,674	2,301,590	2,793,007	3,375,411	4,060,579	4,847,579

TECHNOLOGY BYTES

...BITS and BYTES you may have missed in the rush to make a dollar ...

August 28, 1997 ♦ VOLUME 97-07-40

Satellite TV and Radio

At least one Australian reporter to SatFACTS claims Exxxtasy's triple-X adult programming within the SPACE TV Systems bouquet (1177E, Ku band) has reappeared. If it has, very few have seen it and the conditional access system promised by SPACE TV Systems is not very robust. Here's what curious people are doing: Go to 177E, 12.612 horizontal, and ask your Nokia e3 (software 2.233) receiver to load the programme channels. If your receiver has previously loaded these channels (prior to August 1), erase the earlier memorised programming channels before reloading the present line-up. Amongst the channels that will reload will be several that remain free to air. Note with particular interest programme channel 207. After (typically) 0300 UTC daily (until typically 2000 UTC) 207 will have recent release blood, guts and soft porn movies from the UK, USA and France. The audio channel will be the original broadcast language (English or French) while on screen you will see Mandarin subtitles. Notice the content of the movie, and then if you feel qualified follow instructions from SatFACTS August 15th (page 11) to enter and use the red screen menu. Now find programme channel 904 from the list your Nokia has loaded (*) and from the red screen menu change the video PID to 03C and the audio PID to 03D. At this point as you back out of the red screen menu, you could be watching (and listening to) Exxxtasy adult channel programming. If the movie on 904 looks identical to what you saw on 207, come back later (such as 1200 UTC) and try again. (* - 904 is the press-time Exxxtasy programme channel within the bouquet. This number may be changed and if you see any programme channel loaded on your Nokia starting with the number 9, that is one you should try.) There is a P.S. to this - once into the red screen menu and this software routine, some reporters claim several additional 'CA' programme channels are available as well. Now - at least one knowledgeable NZ observer with the appropriate credentials and equipment believes the Australian observers are "confused." The programme 207 FTA movies are on occasion close enough to porn to be confusing (most people have never actually viewed a triple-X film and anything that shows bare breasts and sexual activities is misread as "the real thing."). Moreover, a check of 904 and other SPACE Systems programming channels with a receiver capable of determining the exact nature of a conditional access channel indicates that SPACE's channels with no video present actually has no video present; i.e., there is no conditional access operating and therefore no video. Bottom line: The SPACE TV Systems project seems badly mired down in internal problems presently and there may be far more smoke than fire here.

Australian reports advise that an announcement or series of announcements are expected soon to clarify the ongoing expansion of digital TV service to Australia. Here are the summaries, subject to confirmation. First, there will be two - not one - MPEG digital "standards" for Australian satellite to home TV. Format one will be - are you ready - Scientific Atlanta PowerVu. The outback (HACBSS) series will be transmitted through PanAmSat PAS-2, Ku, using PowerVu; Perth broadcaster GWN has already announced it will begin feeding its service via PAS-2 "on or about November 1st." A similar announcement is expected from Imparja shortly. ABC and SBS remain to be convinced of the wisdom of this change and ABC reportedly has signed a five year contract to utilise the Optus Aurora platform (Optus B1, presently). Coincidentally, SA will announce a new consumer version PowerVu receiver "sometime in September." The 9224/9230 (both model numbers are mentioned) will carry an Australian retail price of \$1,000 which translates to around US\$800. This unit is reported to be built by an Asian supplier; Sun-Moon-Star seems likely. The second MPEG format will be "the same as is used by the pay television DTH service provider (Galaxy), which is likely to be renamed (from Galaxy) after Murdoch and Packer assume control (CTD 9706, p. 16). Why not simply say the second format

CTD Enters Year Five

Something like 5.2 million words ago, we published our first issue of Coop's Technology Digest. My how time flies when technology is moving so rapidly. This completes our fourth year of continuous publication. To those several dozen who have been subscribers from issue one, our heartfelt thanks. To those just joining us - the next four years are likely to dwarf everything we have seen to date. Welcome to the 21st century!

INTELSAT 701 READY to TURN ON from 180E

For anyone who started in the satellite receiving arena back more than 3 years ago, the original and often only satellite video source - Intelsat at 180E - was the satellite of choice. The current resident satellite at 180E has been IS11, a satellite originally launched in June 1985. IS11 has been short of station keeping fuel for three years, and to keep it operational has been allowed to function in "inclined orbit." This has meant that each month the satellite was straying further north and south of the equator in an ever enlarging figure "8" pattern. On the ground, users of this satellite have been forced to "track" its movement to maintain connection. Intelsat 802 was launched and placed into operation at 174E where it freed up 701 at 174E to move to 180E. As of midnight (NZ) August 26th, Intelsat Operations Control advised CTD, *"701 is nearing station (at 180E) and all we need to do is 'apply the brakes', make sure nothing has changed, and then do the transfer."* The likelihood is that as you read these words the transfer to 701 at 180E is taking place. Sister publication SatFACTS solicits reports of observations (tel 64-9-406-0651 or fax 64-9-406-1083).

will be Irdeto with Pace receivers? Because it is likely that after Murdoch/Packer assume control of Galaxy, the Irdeto receivers will be scrapped in favour of a new NDS conditional access system built around a new version of the Pace DVS-200/211 receiver. Why replace a universe of 200,000-plus Pace DGT-400s using Irdeto CA with something new (and perhaps more expensive)? The Pace receiver is the most likely candidate for the Sky (NZ) service, and, it offers a unique "pay-per-view" modem that will allow the DTH operator to offer movies and sporting events on a per viewing basis. The DGT-400 was never designed to be this flexible and Murdoch's people believe they will ultimately make more money out of pay-per-view of movies and sporting events than they will out of pay TV channel "packages." And, in fact, if Australian DTH subscribers purchase only two movies per month and 3 sporting events per year with their pay per view option, the cost of replacing 200,000 DGT-400 receivers will "wash" in the first year. Murdoch needs a box that will allow him to sell AFL games on a pay per view basis to Australian viewers. The Pace + NDS package will do it, and that is reason enough to throw out the DGT-400s with Irdeto.

Pace claims they have manufactured 860,000 digital TV boxes (IRDs) from their first production in September 1995; 503,000 in fiscal year ending May 1, 1997.

Australian 7 Network has purchased the rights to program the Australian (ATV) Network seen on Palapa C2 and other satellites for a reported A\$10 million. 7 Network has promised to keep ATV operating for at least 4 -1/2 years. ABC's ATVI (I for international) has been under political and press attack for two years and many feared it would simply be shut down. Overseas Radio Australia is facing similar threat. Current programming on ATVI will continue, and 7 Network will add additional programming. ATVI reportedly had lost A\$7.3m from its first broadcasting days.

Hyundai has supplied selected users with "beta test chips" to upgrade performance of HSS-100C receivers. There is pair of chips per receiver, one marked "odd" and one marked "even" which when top is lifted will quickly be spotted with same markings on original chips. With new chips inserted, beta testers tell sister publication SatFACTS Monthly, "The sensitivity is far better, a smaller dish is required, and the NTSC format signals such as Star TV Asia which were formerly difficult or impossible to receive are now perfect." Test chips came through Hyundai distributor Pacific Satellite (Brisbane), should be available at other locations by mid-September; price not announced.

Scientific-Atlanta has decided to create a distribution program to sell their new consumer grade MPEG version receivers; approximately 8 dealer/service centres will be created throughout Australia and the Pacific. SA has attempted to handle the professional and semi-professional needs of the entire (south) Pacific area from their Sydney office, with mixed (and often unpleasant) results. With their market about to explode as consumer version product comes into the marketplace, they now realise the need to have more sales and service centres which will, in effect, act as a "buffer" between the end use consumers and the company. Expect an announcement of the first dealer appointments by October, in support of the plan to provide consumer grade receivers to HABCSS and other viewers.

Murdoch influence? US cable industry owned Primestar DTH service has been wed to General Instrument (DigiCipher) MPEG version technology from first day. Now Primestar admits it is "studying" Rupert Murdoch's favourite technology company, Pace, plus (Murdoch owned) NDS conditional access technology. Primestar is faced with wholesale change out of more than 2,000,000 DTH receivers sometime in 1998, and this would seem to be an opportune point to make the switch. Murdoch backed out of contract with Echostar to joint venture with them as a US DBS player in April, reportedly over Echostar's resistance to changing out their receivers and the conditional access system to one which Murdoch favours. Subsequently he bought into 30% of Primestar (TAT)

DTH/DBS Consumer Sales Slacken in USA: Confusion Blamed

Against a projection anticipating 10,000,000 DirecTV subscribers by the year 2000, growth has slowed to the point where if it continues as at present the number will be nearer to 7.5 million. DirecTV has added 350,000 homes since January 1; the industry overall appears to be adding 6,000 new clients per day. Good? Not good enough. Echostar DISH claimed 590,000 subscribers as of 30 June, now doubts it will hit magic 1 million mark by year end. Third competitor, cable industry owned Primestar (which recently merged with Murdoch's ASkyB) expects to end up adding 500,000 new users in 1997 with 2.3 million total at year end. Intensive study of marketplace indicates consumers are still interested in service but are very confused by pricing strategies. During past 12 months, cost of purchasing hardware has tumbled from US\$750 to under US\$200, and most recently, anyone purchasing in advance year's worth of programming (at US\$300 upwards) can usually find a way to get the dish hardware free of charge. Another issue is the promise (since withdrawn) that local TV channels would become available via satellite. Echostar first proposed this plan, Murdoch joined in and the US press gave it significant coverage. Then the Echostar + Murdoch deal fell apart, Echostar now says they can't do it on their own, and the consumers are wondering whether they should wait for some new development before buying. This same issue will confuse New Zealand buyers of Sky as well shortly when the public learns that TV1 - TV4 are planned as a part of the Sky DTH package next May.

Marketing guru John Sie sums it up with:

"DBS has been sold as a widget until now. What it lacked is a consumer marketing position so that consumers know what they've got. DBS has the best of cable (programming) plus it brings a video store into the home. If you can creatively weave that story, it will attract a broader consumer base rather than trying to pick people who are dissatisfied with cable service, which is a narrow niche." Are you listening, Sky???

and that Primestar might in fact become a user of Murdoch receiver and conditional access technology should surprise no one (see SatFACTS August 15, 1997; p. 12).

Echostar (US DBS operator of DISH service) is scaling back plans to provide range of local TV signals via spot beam satellites in addition to national entertainment programming. Firm now says it will offer local TV services only to cities with 500,000 or more population; first service to come from Echostar 3 satellite that will park at 61.5W and is scheduled for launch late in September. In April 1998, Echostar will launch number 4 satellite to 148W. (Although the beam coverage is supposed to be all towards the USA, there is at least the possibility that Echostar 4 at 148W may provide some amount of useful service level to segments of the Pacific.)

Indostar, when launched (before end of the year) and placed into operation on S-band (2.6 GHz downlink range) from 106E region, will create wholesale change in Indovision operations. The Jakarta firm is now advising affiliated dealers that when S-band Indovision is functional, it will duplicate on S-band all 20+ of the presently available Palapa C2 C-band programme channel packages. Moreover, within six to twelve months, the Palapa C2 transponders will be vacated and Indovision will then only be available on S-band. Consider the logistics of this: Some quantity, hopefully numbering only a few thousand (Indovision claims more than 20,000, however), Indovision Palapa C2 subscribers have been signed up for the Star/Murdoch operated programming package. All of the existing *dish* systems will have to be retrofitted from C-band to S-band (new feeds, new LNBs). Where the viewers are using their present C-band systems to receive services in addition to Indovision, they will be faced with adding a new - second - dish just for the S-band feeds. Or, give up their C-band services in favour of an S-band only service from Indovision. It is the habit of most Southeast Asian viewers to have motorised dishes capable of receiving multiple satellites and dozens of channels of service - in addition to the Indovision package. That an appreciable number of these Indovision C-band subscribers will react positively when told they have to have their dishes retrofitted for S-band, and, give up their non-Indovision service channels if they wish to continue receiving Indovision, is a risk Indovision is taking. And of course the dishes will have to be re-aimed at the new satellite as well. That Indovision, the pay TV service, will get out from under this logistics challenge in anything less than one year of transition, is a real question. At some point subscribers are likely to say - "Hey, who needs this, anyhow!"

MTV Europe is being transmitted into New Zealand on the Television New Zealand digital link from 180E (was I511, now I701); frequency 4162, Msym 5.632, FEC 3/4 and open key.

Imparja and ABC in Scientific Atlanta PowerVu MPEG format on PAS-2, Ku uplinked from Telstra Bendigo (Victoria) station have moved from 12.321 to 12.300 GHz (Vt). There are now two audio channels

Say Good-Bye to Dishes and Hello to Plates

UK based Fortel Technologies in partnership with Delta Digital of Malaysia begins sample production runs of totally new "flat plate design" satellite antennas this month. Firm hopes to produce 1.2m units in first year at new US\$6 million automated plant in Malaysia. Antenna "absorbs" signal through network of "canals" coated with MacDermid copper. Entire antenna is weatherproofed with special Dow Chemical compound. Basic antenna has four plates, each with 144 square aperture waveguide openings which are configured to accept dual linear or dual circular polarised signals. There is no feedhorn per se - LNB fits to waveguide flange on panels and entire assembly is "unobtrusive" and they claim easy to mount. No sizes are given but release talks of antenna being "adaptable to new frequency bands" (whatever they might be).

Information from USA (+ +) 703-821-4235.

which are free to air (the TV remains CA); ABC northern radio (3) and Imparja radio (4). Dishes as small as 1m are getting glitch free reception of these two audio channels in Auckland area.

Hallmark TV is new on AsiaSat 2 (3940, Vt at 26.655 and 3/4). Hallmark is an English language movie service, owned by a USA firm, which is presently being distributed through cable and DTH services into Asia. The signal has been on PAS-4 for several months. Testing reported during mid-August was FTA although the audio or video might disappear for several hours at a time (apparently because of changes at the uplink).

Other new digital services reported to press-time: Athens Starbird on 3760 Hz AsiaSat 2; Msym 10.000 and 3/4; NapSat 2 on PAS-2 Ku 12.377 GHz Vt (6.620 and 2/3). And, Taiwan Rebar service (AsiaSat 2, 3785 Vt) which uses PowerVu has been testing a new (fifth) channel in FTA PowerVu.

Scientists have recalculated the likelihood that any single geostationary satellite would be struck by a meteorite or micor-meteorite particle during the forthcoming November (1997-2002) Leonids meteor shower return (see SatFACTS June 15th, p. 6). *"If the meteor count rises to 100,000, as some are forecasting, there is a 1% chance that any given satellite will be struck (and damaged or destroyed) by a particle."* Translation? For every 100 satellites in orbit, 1 is likely to get hit. There are now more than 900 in orbit. Ooops.

134E is a trouble spot again. Pacific Satelit Nusantara (PSN of Indonesia) and Tongasat are attempting to find independent arbitration to sort out which firm has legal rights to the location. Apstar 1A has been located at this location in an agreement with Tongasat (the registered owner of 134E) but PSN has also been operating at that location under an earlier agreement with Tongasat. To which Tonga claims PSN was only allowed to use this location through October 1995; PSN claims differently. PSN admits it has "jammed" transmissions of Apstar 1A at that location and host country Indonesia is claiming it, not Tonga, is the registered operator for 134E.

InSat 2E is scheduled to launch to 83E late this year; 11 of its C-band transponders will be leased to Comsat / Intelsat until Intelsat can bring into operation additional satellites for the Asia region.

High power L-Star, a Ku-band satellite scheduled for 116E with a launch late this year, is forecasting that Taiwan area viewers will gain access to 100 channels of digital programming with dishes as small as 45cm when they begin operation.

Chinasat 8, scheduled for launch late in 1998, will have 36 C-band and 16 Ku-band transponders on board. The Chinese have not announced a geostationary location for the satellite, which is being built by Space Systems/Loral.

AsiaSat is now claiming a "total loss" of Ku-band transponders on AsiaSat 2 (previous reports said the downlink power was 13 dB lower than forecast) and is seeking US\$58 million in insurance. The Chinese launch facility is being blamed for the malfunction, AsiaSat is claiming the Ku-band feedhorn on the transmit side of the satellite has been knocked out of position by the launch and is no longer capable of creating the on ground transmission pattern planned.

Espano IRD, to be brought to Pacific by Antares Electronics Pty Ltd (Strathpine, Qld), could be a "dead duck." The receiver had been pre-sold to Antares based upon technical representations by the manufacturer. Three time-spaced samples, the latter two being represented as improvements on the first, have all failed to perform as originally promised. Now the manufacturer is asking Antares for a significant 5 figure amount to send an engineering team to Australia to study the "unique reception problems" of the Pacific region with the promise that after such a study the receiver can be modified for Pacific use. The Espano, under slightly different branding, is supposed to be available in Europe where the manufacturer claims it is performing properly.

Reuters will be expanding to multiple video news channels on their feeds (As2 and others) shortly. New Comstream CBR202 digital satellite receivers, capable of selecting between Reuters feed channels, has variable output transmission rate with high-level synchronous data link control platform. Translation? Two or more channels, directed to specific client needs by remote control, totally switchable from Reuters operations centre.

In the "A little nudity goes a long ways" department, Canal France International (CFI) mistakenly allowed a French film with "nudity" to be placed on a satellite feed which was being carried under contract by ArabSat.

The Arabs responded by yanking the plug (*after 20 minutes - an interesting study in human reaction time*) and advising CFI they were no longer welcome on their satellite. CFI has apologised, hat in hand is asking to be reinstated.

Meade, Kansas, too small for most maps, has been told by US government agency their local ordinance that restricts size, colour and placement of home satellite dishes is against the law. Community required filing fee and approval prior to dish installations, had \$500 fine applicable for violations. US passed law in 1996 making regulations that limit size and placement of satellite dishes illegal unless rules were for specific health or safety reasons and were administered on that basis only.

Microsoft and DirecTV are beta testing at 100 sites in Los Angeles and Seattle **DirecTV Interactive**. The new service allows PC owners equipped with DirecTV (a.k.a. DirecPC) home dish systems to download Internet at speeds of 30 Mbps. Users of new service must have 6 Mb RAM and 1.16 Gb hard drive capacity as minimum entrance requirement. Software is based upon (but not identical to) Windows 95; will be upgraded to new Memphis early in 1998. A less sophisticated satellite delivery service, called DirecDuo data/TV, allows 200 kbps download speed from Internet after subscriber selects Web Sites or files of interest through telephone modem.

Scientific Atlanta posted US\$28.9 million profit in quarter ending June 27th, against US\$22.1 million loss in same quarter year ago. Sales grew to US\$322.7 million for quarter.

Fourth starter in North American DBS world, Alphastar, pulled plug and went "dark" August 8th with 55,000 subscribers left with no service. Alphastar has been under control of bankruptcy court for several months, assets are being offered in auction. Service began late in 1996, lasted less than one year.

DBS losses: Echostar (DISH) lost US\$64 million in 2nd quarter, while Primestar (TSAT) lost US\$55 million. Buried in fine print of financial statements: Primestar is experiencing quarterly "churn" (subscribers who take, then drop service) of 32% (up from 27% year ago).

Digital TV & Radio

In Europe, where there has been no pretence of utilising digital terrestrial broadcasting for HDTV, the DVB Project office has announced they will recommend HDTV as an optional "future" service. And, the International Telecommunications Union (ITU) has reached agreement for a "global standard for digital terrestrial broadcasting (DTTB)." Incorporated into the ITU standard is a high definition common image format (HD-CIF) production standard for HDTV. The aim here is to end the squabbling about variations in MPEG-2, to settle on a single standard at least for terrestrial broadcasting. This would, ideally, result in a single production standard allowing one DTTB and HDTV version television receiver design to be universally used throughout the world. That the ITU suggested standard does in fact become a standard is problematical. There are presently 40 variations of MPEG-2 known to be in operation.

US television broadcasters in announcement that instantly drew angry responses from US government sources and TV set makers are forecasting that "many, indeed most" of the new HDTV licences granted by US FCC will not be used for HDTV. At least not initially. Licenses allow broadcasters to broadcast either HDTV or to use the new spectrum for multiple channels of standard MPEG-2 format (or 16:9 widescreen format) television. Major network US ABC and major broadcast group owner Sinclair both surprised industry with mid-August announcement they plan to broadcast one free to air MPEG-2 16:9 entertainment channel in their new spectrum, and then use remainder of spectrum for pay television and other revenue earning services. While this was always a possibility, the TV industry in the US while pushing for new licences for digital transmission had soft pedalled that possibility. Now it appears this was the plan for many from the onset. CBS and NBC networks declined comment except to say they would produce at least prime time programming in HDTV as quickly as possible. Meanwhile, 480 line (NTSC) digital transmission tests are underway at Washington (DC) facility of WHD-TV in co-operation with Panasonic. The 480 line testing is to gauge the performance of Panasonic developed encoder/decoder units. The 480 line format would be a candidate for terrestrial digital TV if American broadcasters elected not to use their new digital broadcasting frequencies for HDTV. The 480 line signal test has progressively scanned images at a 59.94 Hz frame rate, 704 x 480 pixel resolution, 16:9 aspect ratio and MPEG-2 compression.

Consumer Electronics

Wide-screen (16:9) TV set sales in Europe during 1996 totalled a quite surprising 600,000 units. Of those, Germany sold 150,000, France 130,000, the Benelux countries 163,000. Only 18,000 were sold in the UK. Not surprising, the UK trailed all other countries with number of transmitted 16:9 hours with 700 total for the full year (France led with 10,200 hours of 16:9 transmitted).

Not ready to give up. Continuing battle between TV set makers and PC makers over which "standard" is best for digital TV processing moved up a notch with announcement from Intel of new software - allowing DVD

(discs) to be played on many existing PCs without the addition of a special player. The Intel software run in a Pentium II processor will display (on the PC screen) MPEG-2 video with the "same quality" as DVD-specific hardware.

Microsoft has agreed to acquire 10% of a firm called Progressive Networks, which has developed software that allows real-time audio and video to be transmitted through Internet. Microsoft will license Progressive Networks Real Audio and Real Video products within its NetShow server and will also bundle these products with the next version of the Web browser, Internet Explorer. The day when Internet will be able to deliver any video, any audio to anyplace comes closer and closer.

Yet another possible format entry into the already confused world of next generation audio recording. Sony and five partner firms have announced device they are calling 'Memory Stick' (because of long, thin shape) that accommodates up to 32 Mb of data (audio, video stills, computer data). Plan is to create new physical format for storage of material and to make storage facility small, transportable, and easily used on a variety of playback devices. Present capacity - 32 minutes of stereo audio using ATRAC II compression techniques.

US Senate is likely to pass bill which will make betting through Internet Web Sites illegal in USA. Senate Bill S-474 is out of committee hearing with strong support. Present, confused, US law has driven Internet gambling operations outside of the USA and amount of actual betting done by US residents on gambling sites is unmeasured.

Pioneer TV station delivered via satellite, Atlanta's WTBS (formerly WTCG), will change from broadcast TV service delivered via satellite to cable and DTH viewers to cable-only programmer December 31. WTCG/WTBS was first broadcast TV service to go to satellite (1978) and is seen in more cable homes via satellite delivery than any other North American satellite service. Move is smart one - WTBS as cable-only service will instantly gain around US\$100 million in additional revenue because of copyright payments it will be entitled to receive.

How many TV sets? The global TV receiver universe has now passed 1,288,000,000 with 44% in Asia, 26% each in the Americas and Europe. The remaining 4%? That's us, including all of the Pacific and Africa combined.

DVD (video discs) may be still new in USA but Chinese report they have cracked down on 28 illegal production lines manufacturing pirated video CDs.

Rental movie firm Blockbuster is blamed for parent Viacom US\$217 million loss in 2nd quarter. Blockbuster reportedly lost US\$29 million in "international ventures" in quarter and now has 5,820 stores world-wide, up 1.025 from year ago. Amongst newer stores - many in Pacific region.

Cable/Fibre/MDS/Pay TV

SKY (NZ) addition of second Videocrypt encoded analogue service channel ("Orange") early in August was supported by mail-out of remote control for Uniden satellite receivers to all satellite subscribers; the remote allows viewers to access Orange in addition to previously receiver-programmed Sport channel service. The industry is awash with reports of various technical problems which Sky has not addressed in any sort of formal statement known to CTD. Report one: When Orange Channel was added, which required that the eirp (transponder power) be backed down by approximately 3 dB to accommodate the 2nd channel, the "safety margin" afforded by 60cm range dishes has disappeared. CTD has been contacted by numerous installers who report customers are now complaining about signal outage during heavy rain storms. The facts here may be as simple as sloppy installation techniques during which the installer neglected to properly peak the dish for maximum signal, and now that the addition of Orange has resulted in a transmission power reduction, whatever margin as was previously present is gone. Report two: Some say 15%, others claim as high as 30%, of the California Amplifier LNBs provided to Sky have already failed. Again, the truth may be something else. California Amplifier was low bidder for the Sky LNB order and it is a fact that California Amplifier has at least two "grades" of LNBs available. The so-called "B-stock" is equipment which CalAmp originally sold to other DTH operators (including Galaxy in Australia) and which has been returned (from Galaxy) as "defective." Here again, the truth is not as it may appear. When a Galaxy installer went to a Galaxy customer home and experienced difficulties in making the DTH system play, he was instructed to replace various system parts rather than to attempt trouble shooting on his own. Any LNB that came off a Galaxy job which the installer felt "might be imperfect" went into a pile and was scheduled to be rechecked, regraded and re-rated by a technical house in Australia. Those units that passed this reclassification test were then labelled "B stock." How many, if any, of these "B-stock" units ultimately ended up in Sky hands is unknown. And in fact, since B-stock units were typically not broken to begin with and were only scheduled for rechecking because a Galaxy installer had an install problem, in a sense they could have been the best of the lot: They were checked *twice*. If in fact the 60cm range dishes are experiencing real - not imagined - reception problems with the two half-transponder analogue signals being transmitted by Sky, observers are concerned that when Sky goes to digital transmission (see below) that the further reduction in signal levels required by digital will create a problem with poorly installed or marginal reception dish systems.

Sky NZ take over by INL/Murdoch? *"Imminent, possible announcement this week"* (August 25 - 30) is the insider report.

Sky's formal announcement of their digital bouquet offerings began to surface early in August; was reported in SatFACTS August 15th (p. 32). Here is how we understand the packages will be offered. There will be 8 channels in the "basic" package for NZ\$8 per week (which with gst comes to NZ\$38.40 per month). The channels in this package appear to be: TV1, TV2, TV3, TV4 plus Discovery and terrestrial horse racing (Trackside) on a 5th channel, Orange and the US version of MTV will share a 6th, Sky News plus CNN will share a 7th, and TNT plus cartoons the 8th. *If that is correct*, then the question arises about *"Why should viewers pay for digital delivery of TV1,2,3 and 4 when these are free to air terrestrial signals?"* One possible answer - not from Sky at this stage - is that TV1,2,3 and 4 will in fact be free to air on satellite as well (i.e., anyone with a DTH receiving system can access these channels without paying a fee). If this turns out to be correct, that means \$38.40 per month is the charge to receive Discovery + Trackside, Orange + MTV, Sky News + CNN and TNT + Cartoons; that comes to \$9.60 per channel per month. Not cheap. Now, in addition to the "basic" package, Sky plans to offer a two channel movie package consisting of existing HBO plus new addition Hallmark (Hallmark is a US greeting card company which owns the rights to thousands of hours of made-for television drama and movies; see "Satellite TV & Radio" section here). When this two-channel package is added to "basic," the cost becomes NZ\$58.50 per month. With six real channels (plus TV1-4 FTA), that comes to NZ\$9.68 per channel per month. Still not cheap. Or, subscribers will be offered "basic" plus Sport 1 (existing sport channel) and a new "Sport 2" service for \$53.21 per month (or, \$8.87 per channel per month). Finally, for the big league punters \$65.30 per month for "basic" plus movies plus sport; \$8.16 per channel per month. All of this is presently targeting May 1, 1998 start date. The sport and Orange analogue channels will continue past May 1 for an unannounced period of time, but will eventually be taken off. When this happens, the transponder presently in use for sport and Orange will be turned into the second digital transponder and from 12 to 16 movies will be offered here on a pay-per-view basis. In June 1999, Sky takes occupancy of their third transponder and no decisions are yet firm as to how that transponder will be programmed. Sky continues to talk with other potential programmers about the third transponder and a Maori national service remains one of the possibilities.

(Amusing: The November 29 [1996] edition of TV Guide reported, *"TV Guide understands (the Sky satellite) plan is that subscribers who spend around \$300 for a mini satellite dish will be able to receive 10 Sky channels, rather than the present five. Other options are being looked at, including giving out a free satellite dish in return for a five year contract. The dishes cost \$900-\$1000, but will be subsidised by Sky. Among the (new) channels is a second ESPN sport channel ... a channel like Orange but with British shows such as Fawlty Towers, and a channel screening the Hallmark brand of quality made-for-TV movies."* At the time of this report, no doubt TV Guide was receiving insider information from the Murdoch world in as much as TV Guide is owned by Murdoch, and late in November - 1996 - it seemed very certain Sky would be sold to INL/Murdoch. Hallmark and ESPN2 are in fact in the announced Sky digital line-up, while the "Orange-like" channel is called "UK TV" and is already on satellite [but only available to DTH and cable systems] through an AsiaSat 2 feed. That "UK TV" might end up in the third transponder set for Sky, after Murdoch does take over, remains a possibility.)

You saw it here first - even if we could not tell you much detail. Sky is less and less likely each week to be the only New Zealand region DTH pay television broadcaster. A project now three years old is nearing public announcement stage from a group that has been very carefully putting all of the pieces together for a competitive to Sky service. With one significant difference: This one will use a satellite with direct coverage into Australia as well as New Zealand. Which satellite? What programming? How much to subscribe? Who will handle the installations? Sorry - for not, that is it.

TCI ownership interest in Sky and the likelihood that Murdoch/INL will soon control Sky: Leo Hindery, President of TCI and appearing before California Commonwealth Club August 22, when asked about TCI plans to "grow" their international investments: *"At one point we were in Malta, Israel, eastern Europe and the Pacific to name a few. We were like the United Nations - we never met a country we didn't want to do business in. I have killed all of that and we will concentrate in the UK, Japan and Argentina. I leave the remainder of the world to the rest of the cable fellows. We may grow our Pacific area interest beyond Japan, after we are firmly established there, but not soon. I want us out of all other international investments and the sooner the better."* New Zealand and Australia were not on his "keep" list.

TCI has begun process of spinning off TVI Ventures Group which includes all of its international assets (including Sky NZ holding). TCI Group, surviving primary corporation, will concentrate on (US) domestic cable TV holdings, Internet holdings and telephony business.

Interesting problem for First Media? They claim they are very pleased with "results" from their "The Box Worldwide" music videos on request service, and that it is earning them money. Well, it seems The Box has been acquired by TCI Music (of the same TCI that owns a piece of Sky NZ) and this could pose some problems for ongoing use of this service by First Media. TCI plans to expand service to four multiplexed music video

channels each with a targeted format. That's one facet of the satellite video world these days: You wake up in the morning, roll over and check to see who it is you are in bed with.

Cable statistics from America: Average cable monthly bill in US - \$35.46 against \$30.73 in 1994. Average cost to cable systems for programming: US\$8.01 in 1997 against \$6.69 in 1994. Percentages? 22.59% of revenue is spent on programming acquisition.

California resident Carlos Nowlin has been found guilty of felony possession of "illegal cable descramblers." Prior to January 1, possessing grey market cable descramblers was a misdemeanour (minor) offence. When Nowlin's house was raided, LA county deputies found and confiscated 2,000 grey market decoders and more than \$300,000 in cash.

Cox Cable in San Diego (Ca) has completed installation of cable-telephony service equipment and is now offering its 477,000 San Diego County cable subscribers long distance telephone calls. Two plans for subscribers: US 13.5 cents per minute to any US state at any time, day or night, or, 9 cents per minute 7PM - 7AM weekdays and all weekend.

If First Media (Telecom cable unit) in New Zealand was planning to bring in programming from parent Bell Atlantic, it may have to correct the course. Bell Atlantic and four other regional Bell firms joined forces with Disney to create a new company to produce programming for (regional telephone firm) cable systems. Now the deal is over, the programming unit has shut down. Telephone firms two ventures, Tele-TV and Americas, with Disney as the creator. Unable to secure adequate programming at reasonable pricing through existing cable TV industry sources, the telephone firms believed they could make their own. The possibility that such original-for-telephone-TV programming could end up on First Media was discussed.

Washington DC power utility, PEPCO, is building US\$300 million fibre optic network to offer telephone and data transfer within the city; says they will expand to cable television at some future date.

Terrestrial Broadcasting

Reaching the 15-24 year olds, a challenge for TV broadcasters world wide, has not been the bonanza expected by the UK's new CH5. In the first month of operation, CH5 managed to snare 2.85% of the British audience - lower than expected. Worse yet, a study of viewing attitudes amongst the target 15-24 year olds shows 38% believe TV5 to be the "*worst of all available channels*." Perhaps the answer is to turn all programming decisions over to the target audience group since it is increasingly apparent older folks just don't tweak to the same drum beats. Early viewing reports for TVNZ's MTV import from Europe carried through their Horizon Pacific outlets is even less encouraging.

UK CH5 had problems before it went on air. The only available TV channel in the UK was channel 37 and unfortunately this channel is commonly in use for VCR, satellite and other local signal sources through a modulator. Tens of millions of pounds were spent by CH5 to send "tuning assistants" to homes throughout the UK so that viewers would have a better chance of tuning in the new channel. This had mixed results. The next problem was the likely interference to southern UK areas from French TV transmitters operating on channel 37. To gain French approval for new transmitters, the UK had to agree to beam channel 37 signals away from France; net result, vast southern coastal regions simply do not have CH5 service. The new channel has responded by signing on to distribute their service via a soft encryption system on Astra 1D and for the 5 million plus UK homes with a satellite dish that would seem to be the proper solution. Sadly, no. Astra 1D uses a satellite frequency which more than half of the existing UK satellite systems cannot receive without an adapter unit which sells for as much as twenty pounds.

Co-channel interference, which results from too many TV transmitters being located too close together, has become a new challenge with the addition of TV4 transmitter sites and the reworking of established TV3 sites. Complaints about loss of programming service abound and are even making the letter columns of TV Guide and The Listener. Solutions for individual homes probably defy economic resolution although technically possible with clever aerial designs. For off-air rebroadcast systems that rely on another transmitter for their feed, electronic solutions are more practical. Tennatron Industries (N.Z.) Ltd. has developed an electronic solution to co-channel interference (CCI). The filter, which has a New Zealand patent, is said to "*very significantly reduce the effects of CCI*" and it is connected between the receiving antenna and the transposer or receive input for bands I and II (II is the FM band), or in the IF cable line for bands I-V. A baseband (video) version is also available; details from Tennatron at PO Box 218, Motueka (tel/fax 64-3-528-8707).

US television networks (including cable) have been given instructions to increase percentage of TV programming equipped with closed-captions (printed text of words spoken on screen through teletext page). New FCC rules require that 25% of all new programming be captioned by December 31, 1999 with 25% expansion every two years until 100% of new programming is so treated. Older programming (produced before January 1, 1998) has until 2008 for 75% of material to be captioned. Exemptions include commercials under 5 minutes in length and foreign language programming.

Name change: CanWest Global began operating under new name Global TV Network August 18th.

